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# 1 [External memory algorithms and data structures: dealing with](#)

## massive data

Jeffrey Scott Vitter

June 2001 **ACM Computing Surveys (CSUR)**, Volume 33 Issue 2

Full text available: pdf(828.46 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Data sets in large applications are often too massive to fit completely inside the computers internal memory. The resulting input/output communication (or I/O) between fast internal memory and slower external memory (such as disks) can be a major performance bottleneck. In this article we survey the state of the art in the design and analysis of external memory (or EM) algorithms and data structures, where the goal is to exploit locality in order to reduce the I/O costs. We consider a varie ...

**Keywords:** B-tree, I/O, batched, block, disk, dynamic, extendible hashing, external memory, hierarchical memory, multidimensional access methods, multilevel memory, online, out-of-core, secondary storage, sorting

# 2 [An evaluation of automatic object inline allocation techniques](#)

Julian Dolby, Andrew A. Chien

 October 1998 **ACM SIGPLAN Notices , Proceedings of the 13th ACM SIGPLAN conference on Object-oriented programming, systems, languages, and applications**, Volume 33 Issue 10

Full text available: pdf(2.26 MB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Object-oriented languages such as Java and Smalltalk provide a uniform object reference model, allowing objects to be conveniently shared. If implemented directly, these uniform reference models can suffer in efficiency due to additional memory dereferences and memory management operations. Automatic *inline allocation* of child objects within parent objects can reduce overheads of heap-allocated pointer-referenced objects. We present three compiler analyses to identify inlinable fields by t ...

# 3 [Networking experience: Taming the underlying challenges of reliable multihop routing in sensor networks](#)